TECHNICAL NOTES

LAKE STATES FOREST EXPERIMENT STATION
U.S. DEPARTMENT OF AGRICULTURE · · FOREST SERVICE

No. 610

Attraction of Wood-Boring Insects to Freshly Cut Pulpsticks

Wood-boring insects, which are highly destructive to pulpwood and sawlogs, damage the wood cylinder by excavating surface galleries and deep tunnels under the bark. Up to 5 percent of the volume in each conifer pulpstick may be lost; and lumber cut from infested logs may be degraded considerably.

A small study was conducted in 1961 in northern Minnesota to observe the rapidity of attraction of wood borer adults to freshly cut conifers. Five balsam fir trees were felled, cut into short pulpsticks, and arranged in four piles around the slash heap in a clearing. One large black spruce tree was also cut and stacked into a single pile near one of the balsam fir piles. The total volume of rough pulpwood was 57.8 cubic feet for the balsam fir and 13.5 cubic feet for the black spruce. Cutting began about 8:15 a.m. and was completed by 10:00 a.m. on August 4. All wood borers observed on the piles and slash were collected and recorded several times per day for the next 2 weeks. Collected insects were not released.

The first insect, the white-spotted sawyer (*Monochamus scutellatus*), was collected at 11:15 a.m., just 2 hours after cutting. The numbers of *Monochamus* and other insects mounted steadily after that, and by nightfall 255 adults of several genera of wood borers had been collected. Of these, 229 were *M. scutellatus* and 13 were a closely related species, *M. marmorator*. The remaining insects and the numbers collected were: *Xylotrechus undulatus* (4), *Anoplodera canadensis* (1), *Buprestis maculiventris* (1), *Chrysobothris scabripennis* (1), *Urocerus albicornis* (3), *Urocerus flavicornis* (2), and *Sirex cyaneus* (1). During the remaining period of the study *Monochamus notatus*, *Serropalpus substriatus*, and *Pissodes dubius* were also collected.

Previous studies in this area have shown that, of the various insects attacking balsam fir and black spruce, species of *Monochamus*, especially *M. scutellatus*, are the most destructive. Other genera are unimportant at present, principally because of their low populations. *M. scutellatus* was the most abundant insect attracted to the piles during this study (table 1), and over one-half (229) of the total (436) was collected the first day. *M. marmorator* was also important, but only 32 were collected over the 2-week period. The number of *Monochamus* beetles dropped considerably the second day (fig. 1); thereafter it increased daily until a second influx on August 8 produced one-third as many as on the first day. Numbers declined steadily after that until the end of the test.

Mating, egg-niche cutting, and egg laying were all observed on the first day of the test. Each female is known to cut several egg niches in the bark and to deposit one or more eggs in these slits. The speed with which large populations of *Monochamus* beetles collected, plus the fact that 55 percent were females, points out the necessity for fast and efficient protection of rough pulpwood and sawlogs cut in the summer and left in the field after cutting. If each female laid only one egg the first day, within 2 weeks over 120 larvae would develop from that attack alone, and subsequent egg laying would increase the number greatly.

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Since the white-spotted sawyer needs from 12 to 23 months to complete its life cycle, depending on the location, a few months to over a year are needed before the larvae can cause appreciable damage. If the logs are to be utilized within a few months, wood loss will usually be negligible. Otherwise, rough logs should be removed from the cutting site immediately or, since this is generally impractical, other methods of protection should be employed. Spraying the piles or logs immediately after cutting with insecticides such as benzene hexachloride (BHC), covering them with a heavy layer of slash, or piling them in the shade of standing trees will protect them substantially.

October 1961 LOUIS F. WILSON, Forest Entomologist

Table 1.-- Wood-boring insects obtained from pulpwood over a 2-week period in northern Minnesota

Species	Number
Order Coleoptera	
Family Cerambycidae	
Monochamus scutellatus (Say)	436
Monochamus marmorator Kirby	32
Monochamus notatus (Drury)	3
Xylotrechus undulatus (Say)	18
Anoplodera canadensis (Oliv.)	1
Family Buprestidae	
Buprestis maculiventris Say	1
Chrysobothris scabripennis L.&G.	4
Family Melandryidae	
Serropalpus substriatus (Halman)	17
Family Curculionidae	
Pissodes dubius Rand.	5
Order Hymenoptera	
Family Siricidae	
Urocerus albicornis (F.)	7
Urocerus flavicornis (F.)	8
Sirex cyaneus F.	6
Total	538

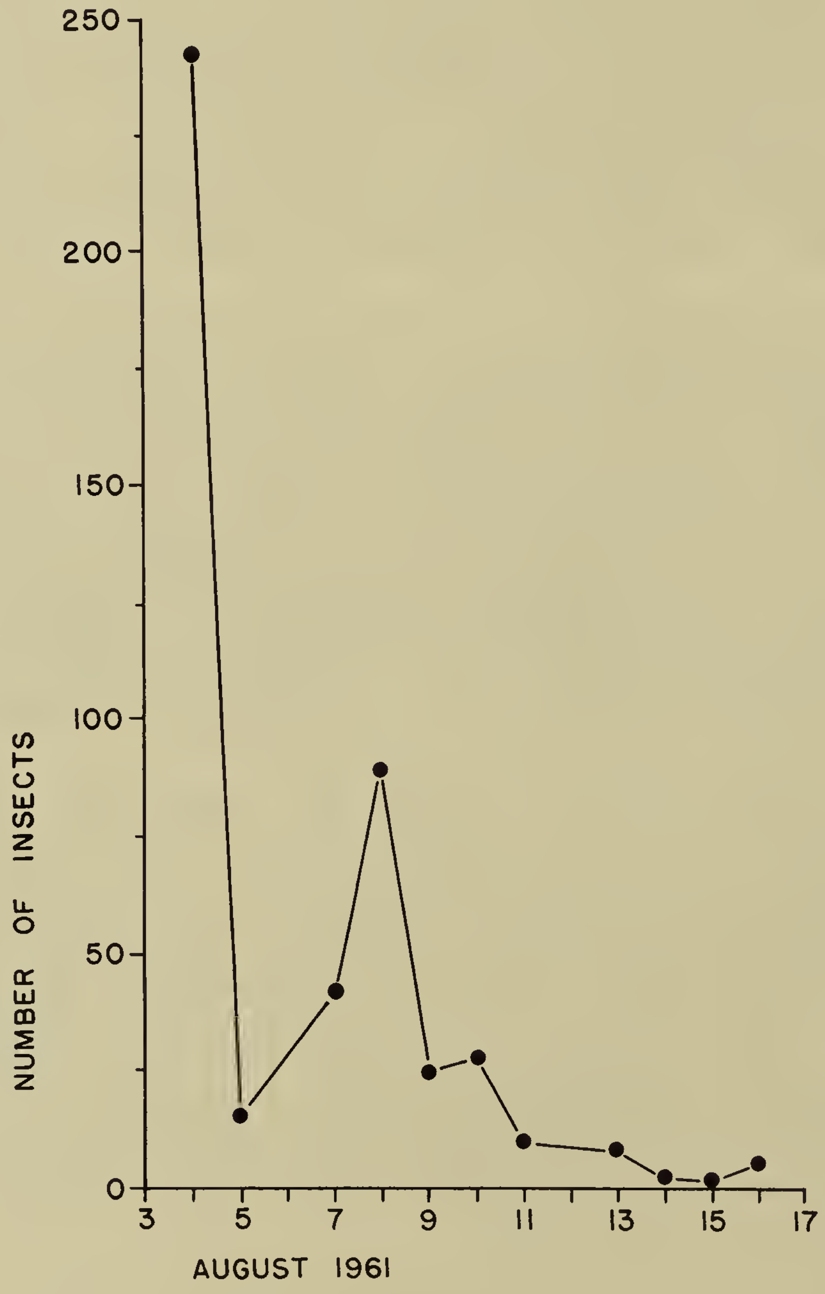

Figure 1.--Daily collections of *Monochamus* species on the pulp piles.